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978-1-108-48414-5 — Culture, Mind, and Brain

Edited by Laurence J. Kirmayer , Carol M. Worthman , Shinobu Kitayama , Robert Lemelson ,  
Constance Cummings

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## Culture, Mind, and Brain

Recent neuroscience research makes it clear that human biology is cultural biology – we develop and live our lives in socially constructed worlds that vary widely in their structure values and institutions. This integrative volume brings together interdisciplinary perspectives from the human, social, and biological sciences to explore culture, mind, and brain interactions and their impact on personal and societal issues. Contributors provide a fresh look at emerging concepts, models, and applications of the co-constitution of culture, mind, and brain. Chapters survey the latest theoretical and methodological insights alongside the challenges in this area, and describe how these new ideas are being applied in the sciences, humanities, arts, mental health, and everyday life. Readers will gain new appreciation of the ways in which our unique biology and cultural diversity shape behavior and experience, and our ongoing adaptation to a constantly changing world.

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# Culture, Mind, and Brain

*Emerging Concepts, Models, and Applications*

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To Dorothy Lemelson, for her dynamism, vision, deep  
compassion, and support

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The human mind was not designed by evolutionary forces for finding truth. It was designed for finding advantage.

Albert Szent-Györgi

Science sometimes sees itself as impersonal, as “pure thought,” independent of its historical and human origins. It is often taught as if this were the case. But science is a human enterprise through and through, an organic, evolving, human growth, with sudden spurts and arrests, and strange deviations, too. It grows out of its past, but never outgrows it, any more than we outgrow our own childhood.

Oliver Sacks, “The Poet of Chemistry”

*Le seul véritable voyage . . . ce ne serait pas d'aller vers de nouveaux paysages, mais d'avoir d'autres yeux, de voir l'univers avec les yeux d'un autre, de cent autres, de voir les cent univers que chacun d'eux voit, que chacun d'eux est.*

The only true voyage . . . would be not to visit strange lands but to possess other eyes, to see the universe through the eyes of another, of a hundred others, to see the hundred universes that each of them sees, that each of them is.

Marcel Proust, *Remembrance of Things Past*

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## Preface

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We live at a moment when the neurosciences are undergoing a massive expansion yielding fascinating insights into human functioning in health and illness. At the same time, advances in the social sciences and psychology are reshaping understandings of the interplay of culture, mind, and brain in human evolution, cognition, emotion, self, agency, ritual, religion, politics, and other domains of life. The implications of these advances go beyond what can be discerned by any one discipline. Insights in one area can transform work in others, but this requires that we bridge disciplines with developmental and ecological models that link our understanding of the brain, the person, and the social world.

This book has its origin in a 2012 conference of the same name organized by the editors, sponsored by the Foundation for Psychocultural Research (FPR), and hosted by the University of California, Los Angeles. Since its founding in 2000, the FPR has engaged in a wide range of granting and programming to bring together scholars in disparate fields to talk about emerging concepts, methods, and applications in the study of culture, mind, and brain with particular attention to: (1) innovative neuroscience research that successfully engages culture and the social world; (2) the contexts in which methods are used as well as the tacit assumptions that shape research questions; and (3) the kinds of collaboration that can advance interdisciplinary research and training. This was the fifth interdisciplinary conference hosted by the foundation; the previous three had resulted in edited volumes. However, other commitments left this project on the back burner for several years.

In 2016, we returned to the topic with renewed interest and conviction that advances in this arena warranted comprehensive treatment. Powerful new metaphors had emerged, particularly the idea that the brain is a dynamic network of global and regional neural processes, one that actively makes use of prior knowledge, beliefs, and experiences to predict, plan, and implement action programs. At the same time, we have learned more about how closely the brain is coupled with the social world – structurally and dynamically – in processes of co-construction.

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Over the past few years, we invited scholars and researchers from many disciplines to join us in taking a fresh look at emerging concepts, models, and applications that provide new ways to think about the interactions of culture, mind, and brain. The book before you is the result of this interdisciplinary exchange. The questions the contributors were invited to address include:

- What are the “cutting-edge” topics in social and cultural neuroscience – the neural, psychological, and social processes underlying human diversity – that have special relevance for efforts to bridge our concepts of culture, mind, and brain?
- Given that the human brain evolved to operate in locally contingent ways within socially constructed environments, an “eco-systemic” approach to mind, brain, and culture may provide a more biologically relevant and richer way to think about “context.” But how can concepts of such complexity be studied in a scientifically rigorous fashion?
- What are the clinical and societal implications of current research in neuroscience, including epigenetics, predictive coding, network theories, and our evolving understanding of developmental trajectories through brain–mind–body–environment interactions?
- What are some of the novel transdisciplinary ways to engage human diversity and variation, to think about the mind as embodied and enacted, and to investigate culture as both integral to individual experience, and as a dynamic process at multiple levels of social organization – from family, to community, to society and global networks? How might emerging insights, tools, and frameworks address current challenges to human flourishing and sustainability?

The response to the invitation to address these questions is the rich set of essays in this volume, which explore how neuroscience and social science can be brought together in meaningful conversation to illuminate human nature and experience.

We take this opportunity to thank the speakers, panelists, discussants, and especially our audience at the FPR’s Culture, Mind, and Brain 2012 conference for pushing us to consider new theories, methods, and tools. The FPR has played an important role in advancing interdisciplinary training and collaboration in cultural neuroscience and social science since its inception. Founded in 2000 by anthropologist Robert Lemelson, the FPR supports interdisciplinary and integrative research and training on interactions of culture, neuroscience, psychiatry, and psychology, with an emphasis on the central role of cultural processes. The FPR has organized a series of conferences, hosted at UCLA, that reflect its commitment to articulate and support transformative paradigms that address issues of fundamental clinical and social concern: *Posttraumatic Stress Disorder: Biological, Clinical and Cultural Approaches*

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to *Trauma's Effects* (2002); *Four Dimensions of Childhood: Brain, Mind, Culture, and Time* (2005); *Seven Dimensions of Emotion: Integrating Biological, Clinical, and Cultural Perspectives on Fear, Disgust, Love, Grief, Anger, Empathy, and Hope* (2007); *Cultural and Biological Contexts of Psychiatric Disorder: Implications for Diagnosis and Treatment* (2010); *Culture, Mind, and Brain: Emerging Concepts, Methods, Applications* (2012); and *A Critical Moment: Sex/Gender Research at the Intersections of Culture, Brain, and Behavior* (2015). This book is the latest volume to emerge from these conferences and represents a stock-taking and capstone project that, we hope, points toward future creative innovation.

The editors wish to thank Irene Sukwandi, director of the FPR, and the foundation's board members – Carole Browner, Marie-Françoise Chesselet, Douglas Hollan, Marjorie Kagawa-Singer, Marvin Karno, Steven López, and Beate Ritz – for their vision, leadership, and support. Additionally, we wish to thank Mamie Wong, FPR program officer, for her sharp insights and skillful editing of the manuscript.

LJK wishes to thank the FPR, his colleagues at the Institute of Community and Family Psychiatry, who have supported his interdisciplinary work for over three decades, and his current collaborators in the McGill-FPR Culture, Mind, and Brain Program for a constant sense of intellectual adventure, excitement, and hope for the future.

CMW wishes to thank the FPR for patiently and presciently fostering the interdisciplinary thought and inquiry reflected in this book, and all those who seek to benefit our common yet diverse struggle to be/come humans together on this small planet.

SK thanks the FPR for its support of the publication of this fabulous collection of essays. It has been instrumental in promoting the science of mind, culture, and the brain. SK is very proud to be part of this effort.

RL wishes to thank both the board and staff of the FPR, all of whom have served for 20 years, for their commitment and deep engagement as we collectively grappled to understand how some of the most complex domains in the social sciences and the neurosciences are related, and creatively designed programs to explore those issues. He feels that he could not have been blessed with a more dedicated, thoughtful, and nice group of employees and colleagues as fellow travelers on this intellectual journey.

Finally, CC thanks her co-editors, the contributors, and Rob Lemelson and the FPR for the opportunity to explore some of this ever-changing terrain with you. CC and her co-editors also wish to thank the highly skilled and thoughtful guidance provided by our CUP team: Stephen Acerra, Matthew Bennett, Rebecca Grainger, Niranjana Harikrishnan, Penny Lyons, and Emily Watton. Finally, CC thanks Erin Hartshorn, Alan Gesek, and Sean Hope Kelly for the superb index and illustrations.

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xx Preface

This book goes to press as humanity grapples with a pandemic, attempting to slow the rate of infection and save lives through public health and economic efforts whose profound effects will continue to evolve and ramify well into the future. Our responses highlight both strengths and fault lines in human culture. These include the distinctively human capacity for pro-social cooperative behavior and solidarity on the one hand, and massive global inequalities in the distribution of wealth and opportunity on the other. To meet the myriad challenges, we must call on our capacities for adaptation, collaboration, and creativity. We hope the conceptual tools and research findings presented in this volume – and the larger enterprise of understanding the interplay of culture, mind, and brain – will be useful resources in this ongoing effort as well as for imagining the new configurations of global society that follow.

# Abbreviations

4E	embodied, enactive, ecological, extended
4R (allele)	4-repeat allele
5-HTTLPR	serotonin-transporter-linked polymorphic region
7/2-R (allele)	7- and 2-repeat alleles of the <i>DRD4</i> gene
7R (allele)	7-repeat allele
ACC	anterior cingulate cortex
<i>ADH1B</i>	gene that regulates the enzyme alcohol dehydrogenase 1B
<i>ADH1B*47His</i>	Polymorphic variant of <i>ADH1B</i> associated with alcohol metabolism
ADHD	attention-deficit/hyperactivity disorder
AI	anterior insula
AIDS	acquired immunodeficiency syndrome
AG	angular gyrus
ANI	Autism Network International
<i>APOE2</i>	apolipoprotein E2 allele variant
<i>APOE4</i>	apolipoprotein E4 allele variant
APPS	attenuated positive psychotic symptoms
aSMG	anterior supramarginal gyrus
BA10	Broadman area 10
BDNF	brain-derived neurotrophic factor
BOLD	blood-oxygen-level-dependent
CAAFAG	children associated with armed forces and groups
CMS	cortical midline structures
CREDs	credibility-enhancing displays
CTRA	conserved transcriptional response to adversity
daIns	dorsal anterior insula and includes ventrolateral prefrontal cortex
DLPFC	dorsolateral prefrontal cortex
DMN	default mode network
dmPFC	dorsomedial prefrontal cortex
DNA	deoxyribonucleic acid
<i>DRD4</i>	dopamine D4 receptor gene

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EEA	environment of evolutionary adaptedness
EEG	electroencephalography
EES	extended evolutionary synthesis
ENS	empty nose syndrome
ERN	error-related negativity
ERP	event-related potential
ESA	early Stone Age
fMRI	functional magnetic resonance imaging
<i>FOXP2</i>	Forkhead box P2 gene
FRN	feedback-related negativity
GM	gray matter
GPS	Global Positioning System
HCI	human–computer interactions
HIV	human immunodeficiency virus
HPA	hypothalamic–pituitary–adrenal (axis)
HPC	hippocampus
IBH	Interactive Brain Hypothesis
IFG	inferior frontal gyrus
IRL	in real life
ITG	inferior temporal gyrus
LMICs	low- and middle-income countries
LTP	long-term potentiation
M1	primary motor cortex
m/pIns	mid/posterior insula (primary interoceptive cortex)
MC	motor cortex
MCC	midcingulate cortex
MD	medical doctor
mhGAP	mental health Gap Action Programme
MMORPGs	massive multiplayer online role-playing games
MNS	mental, neurological, and substance abuse disorders
MOFC	medial orbitofrontal cortex
mPFC	medial prefrontal cortex
MRI	magnetic resonance imaging
MS	modern synthesis
MSR	Mirror Self-Recognition Test
N400	peak (in milliseconds) of event-related potential
NIMH	National Institute of Mental Health (USA)
NPH	narrative practice hypothesis
NTS	nucleus of the solitary tract
O&M	orientation and mobility
OECD	Organization for Economic Cooperation and Development
OFC	orbitofrontal cortex

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P1	ERP component
PACC	perigenual anterior cingulate cortex
PAG	periaqueductal gray
PBN	parabrachial nucleus
PCC	posterior cingulate cortex
PCW	primary care worker
PECMA	perception, emotion, cognition, and motor action
PET	positron emission tomography
pgACC	pregenual anterior cingulate cortex
PHG	parahippocampal gyrus
PLE	power law exponent
PMC	premotor cortex
pMCC	posterior midcingulate cortex
postCG	postcentral gyrus
PPC	predictive processing account of cognition
PPC	posterior parietal cortex
PRIME	Programme for Improving Mental health care
PTSD	posttraumatic stress disorder
PWLE	persons with lived experience of mental, neurological, and substance use disorders
RCT	randomized control trial
rDLPFC	right dorsolateral prefrontal cortex
REC	radically enactive accounts of cognition
RESHAPE	Reducing Stigma among HealthcAre ProvidErs
rLPFC	right lateral prefrontal cortex
ROI	region of interest
RS	rejection sensitivity
SCS	self-consciousness scale
SES	socioeconomic status
sgACC	subgenual anterior cingulate cortex
SI	primary somatosensory cortex
SII	secondary somatosensory cortex
<i>SLC6A4</i>	serotonin transporter gene
SLFIII	superior longitudinal fasciculus
SMA	supplementary motor area
sMRI	structural magnetic resonance imaging
<i>SRGAP2</i>	SLIT-ROB Rho GTPase-activating protein 2
SSC	somatosensory cortex
SSD	somatic symptom disorder
STS	superior temporal sulcus
tDCS	transcranial direct current stimulation
TIV	total intracranial volume

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xxiv      List of Abbreviations

TL	tightness–looseness
TMS	transcranial magnetic stimulation
TPO	Transcultural Psychosocial Organization (in Nepal)
UN	United Nations
UNICEF	United Nations Children’s Fund
V1	primary visual cortex
vaIns	ventral anterior insula
VBM	voxel-based morphometry
vMMN	visual mismatch negativity
vmPFC	ventromedial prefrontal cortex
VNTR	variable number tandem repeat
VS	ventral striatum
WEIRD	Western, educated, industrialized, rich, and democratic
WHO	World Health Organization